

## Curriculum Vitae Dr. Oliver Porth

Researcher ID: O-8125-2017 <http://www.researcherid.com/rid/O-8125-2017>  
Nationality: German  
Sex: Male  
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## EDUCATION

2011 **PhD** in Astronomy (Dr. rer. nat.)  
Faculty of Physics and Astronomy, University of Heidelberg, Germany  
Max-Planck-Institut für Astronomie, Heidelberg  
Supervisor: Prof. Christian Fendt  
Title: "Formation of Relativistic Jets: Magnetohydrodynamics and Synchrotron Radiation"  
Grade: Excellent "Summa Cum Laude"  
2007 "**Diplom**" in Physics  
Faculty of Physics and Astronomy, University of Heidelberg, Germany  
Astronomisches Rechen-Institut, Heidelberg  
Supervisor: Prof. Rainer Spurzem  
Title: "The star accreting black hole in galactic nuclei"  
Grade: 1.1 (very good)

## CURRENT POSITION

2018 – present Assistant Professor  
Wider topic: Computational astrophysical fluid dynamics  
Anton Pannekoek Institute  
University of Amsterdam, Netherlands

## PREVIOUS POSITIONS

2015 – 2018 Postdoctoral research fellow  
Wider topic: Black hole accretion and outflow  
Institute for Theoretical Physics Goethe Universität Frankfurt am Main, Germany  
2011 – 2015 Postdoctoral research fellow, Grade 7  
Wider topic: Dynamics of relativistic astrophysical plasma  
School of Mathematics, University of Leeds, UK

## FELLOWSHIPS

2011 – 2012 Special Research Fund (BOF+) Postdoctoral stipend. Research council of KU Leuven, Belgium  
(funding amount: 34 230 EUR)  
2009 – 2011 Fellow of the International Max Planck Research School (IMPRS), Max-Planck-Institut for Astronomy Heidelberg, Germany (funding amount: 30 072 EUR)

## TEACHING ACTIVITIES

Winter term 2017/2018 Lecturer – Introduction to Astronomy I, Faculty of Physics, Goethe University, Frankfurt am Main, Germany  
Summer term 2017 Lecturer – Introduction to Astronomy II, Faculty of Physics, Goethe University, Frankfurt am Main, Germany  
Winter term 2016/2017 Lecturer – Introduction to Astronomy I, Faculty of Physics, Goethe University, Frankfurt am Main, Germany  
2007 – 2015 Tutor – various subjects at Heidelberg, Leeds and Frankfurt

## **SUPERVISION**

- 2019 – present Supervision of PhD project: Mr. Sebastiaan Selvi, Anton Pannekoek Institute, University of Amsterdam, Netherlands
- 2017 – 2018 Co-supervision of Master project: Mr. Jonas Köhler, Faculty of Physics, Goethe University, Frankfurt am Main, Germany
- 2017 – present Mentor of PhD student: Mr. Elias Most, Faculty of Physics, Goethe University, Frankfurt am Main, Germany
- 2015 – present Mentor of PhD student: Mr. Hector Olivares, Faculty of Physics, Goethe University, Frankfurt am Main, Germany. (3 joint papers, submitted/in preparation)
- 2017 – 2018 Co-promotor of PhD project: Mr. Dimitris Millas, KU Leuven, Belgium (2 joint papers submitted/in preparation)
- 2017 – 2018 Co-supervision of Master project: Mrs. Cosima Breu, Faculty of Physics, Goethe University, Frankfurt am Main, Germany. Cosima is now pursuing a PhD at Max-Planck-Institute for Solar system research, Göttingen, Germany
- 2010 – 2011 Co-supervision of Master project: Mrs. Kathleen Shurkin, Max-Planck-Institut for Astronomy, Heidelberg, Germany

## **INSTITUTIONAL RESPONSIBILITIES**

- 2018 Member of PhD Committee: Mr. Fabio Bacchini, KU Leuven, Belgium
- 2018 Member of PhD Committee: Mr. Dimitris Millas, KU Leuven, Belgium
- 2018 Member of PhD Committee: Dr. Bart Ripperda, KU Leuven, Belgium
- 2014 Member of PhD Committee: Dr. Remi Monceau-Baroux, KU Leuven, Belgium

## **MAJOR COLLABORATIONS**

- 2017 – present Member, “Event Horizon Telescope Consortium” (<http://eventhorizontelescope.org>)
- 2015 – 2018 Member, “Black Hole Cam” ERC Synergy Collaboration: Nijmegen, Bonn, Frankfurt (<http://blackholecam.org>)
- 2011 – present Prof. Serguei Komissarov, Leeds, UK (15 joint papers)
- 2015 – present Prof. Maxim Lyutikov, Purdue, US (15 joint papers)
- 2015 – present Prof. Lorenzo Sironi, Columbia, US (6 joint papers)
- 2012 – present Prof. Rony Keppens, KU Leuven, Belgium (24 joint papers)

## **COLLABORATION RESPONSIBILITIES**

- 2017 – present Coordinator: EHT GRMHD Code comparison, 10 international groups
- 2015 – 2018 Leading GRMHD developer for the “BlackHoleCam” Collaboration: BlackHoleAccretionCode

## **SELECTED PRESS AND OUTREACH ACTIVITIES**

- 2018 “Can we tell black holes apart?” Contributions to [Press-release](#) and Nature Astronomy cover story
- 2017 Public talk: “Einstein’s Relativity” 50’s anniversary of Albert-Einstein-Schule, Germany
- 2017 Animations for Press-Kit of BlackHoleCam Collaboration
- 2016 Contributions to EinsteinInside exhibition ([link](#))

## **REVIEWING ACTIVITIES**

Astrophysical Journal (ApJ), Astrophysical Journal Letters (ApJL), Astrophysical Journal Supplements (ApJS), Monthly Notices of the Royal Astronomical Society (MNRAS), International Journal of Modern Physics D (IJMPD)

## **AWARDS**

My PhD thesis “Formation of Relativistic Jets: Magnetohydrodynamics and Synchrotron Radiation” has been

awarded **with greatest honours: “Summa Cum Laude”** by the Ruperto-Carola-University of Heidelberg, 2011. From 2011-2013, the percentage awarded this distinction was 11.7%.

## PROFESSIONAL BODIES

1. Black Hole Cam Collaboration ([www.blackholecam.org](http://www.blackholecam.org))
2. Event Horizon Telescope Consortium (<http://eventhorizontelescope.org/>)
3. Associate of the Committee on Space Research (COSPAR)

## CAREER BREAKS

15. March 2018 - 31. August 2018 Parental leave, 5 1/2 Months

## RESEARCH CAREER

I am currently Assistant Professor (tenure track) at the Anton Pannekoek Institute, Amsterdam where I am building a research group in the field of computational astrophysical fluid dynamics since October 2018. During my career, I have contributed to research with wide scope, ranging from solar- and space plasma (7 publications) over jet formation from young massive stars (3 publications) to dynamics of relativistic astrophysical plasma (> 30 publications).

I have made key contributions to the paradigm of jet formation from rotating magnetospheres [6], emission and transport of polarised synchrotron radiation in jets [5], jet stability [7,8] and to the understanding of relativistic pulsar wind nebulae (PWNe) [2,4] (numbers in brackets refer to publications listed in the next section). Observable signatures of the jet formation site from axisymmetric MHD simulations were first presented in my pioneering work [5]. Developing the worlds first 3D simulations of PWN, I was able to bring the long-standing “ $\sigma$ -Problem” of PWNe to a satisfactory conclusion [see also my review paper 1]. With the BlackHoleAccretionCode [9], I lead the development of a cutting-edge adaptive mesh refinement general relativistic magnetohydrodynamics framework that is the work-horse of an ERC “Synergy” international team. This allowed me to make key contributions to the interpretation of the extraordinary observations performed by the EventHorizonTelescope collaboration.

## PRESENTATIONS AND SEMINARS

Over my research career, I have given **over 30 oral presentations** at international conferences and meetings with diverse audiences ranging from solar physics to high-energy astrophysical phenomena. In the following, I list a selection out of **12 invited review- or highlight- talks at major international meetings**.

2018 Beyond GR: MHD simulations of the galactic center (**invited talk**)

Conference “The Central Arcsecond: Towards Testing General Relativity in the Galactic Center”, Ringberg, Germany

2017 GRMHD with the BlackHoleAccretionCode (**invited talk**)

Conference “25th International Conference on Numerical Simulation of Plasmas”, Leuven, Belgium

2016 3D simulations of Pulsar Wind Nebulae (**invited review talk**)

Workshop “Modelling Nebulae”, St. Cugat, Barcelona

2015 Termination shock emission and particle transport in PWNe (**highlight talk**)

Conference “High-Energy Phenomena in Relativistic Outflows V”, La Plata, Argentina

2014 3D simulations of pulsar wind nebulae (**Solicited speaker**)

Conference “COSMOS - The 40th COSPAR Scientific Assembly”, Moscow, RU

2013 Jets from accretion discs (**Invited talk**)

Conference “BLACK HOLES, JETS AND OUTFLOWS”, Kathmandu, Nepal

Since 2013, I have given many **invited seminars** and colloquia. A selection is given below.

- 2019 Behind the image, first Event Horizon Telescope results CEA Saclay, Paris
- 2018 Pulsar wind nebulae: our plasma lab in space, Astrophysics Seminar, RU Nijmegen
- 2017 Jet formation in GRMHD simulations, Plasma-astronomy Seminar, KU Leuven
- 2016 Jet formation in GRMHD models of BH accretion and internal jet instabilities, Hauskollquium, MPIfR Bonn
- 2014 Solution to the Sigma-problem of pulsar wind nebulae, Astroplasma Seminar, Princeton University
- 2013 3D simulations of pulsar wind nebulae, Relativistic Astrophysics Seminar, Albert Einstein Institute, Potsdam